

MISCELLANEOUS PHENOMENA.

Meteors.—Marinette, Wis., 3rd, 5 a. m., in northwest heavens; exploded, leaving luminous trail for 10 seconds.

Sunsets.—The characteristics of the sky at sunset as indicative of fair or foul weather for the succeeding twenty-four hours have been observed at all Signal Service Stations. Reports from 153 stations show 4,523 observations to have been made, of which 24 were reported doubtful; of the remainder, 3,690 or 81.6 per cent. were followed by the expected weather.

Earthquakes.—4th, San Jose, Cal., slight shock. San Francisco, 4th, severe shock at 7:37 p. m., vibration from east to west; duration 5 seconds; "no damage resulted, but things were generally shaken up." Los Angeles, 12th, 8:45 p. m., slight shock of earthquake; duration 3 seconds; no decided direction. Sharp shock at Santa Barbara, Cal., same date. at 10:30 p. m., NE. to SW., lasting several seconds; no damage reported. Los Angeles, Cal., 21st, three distinct shocks; first and heaviest at 7:45 p. m., was a tumbling, horizontal motion, from E. to W.; duration 30 seconds; second at 9:45 p. m.; third at 11 p. m., duration several seconds; no damage reported. Heavy shocks were felt at Wilmington, directly south, and at San Bernardino, east; 30th, Ashwood, Tenn., 2 p. m., heavy rumbling sound, supposed to be an earthquake.

Sun Spots.—The following record of observations, made by Mr. D. P. Todd, Assistant, has been forwarded by Prof. S. Newcomb, U. S. Navy, Superintendent Nautical Almanac Office, Washington, D. C.:

DATE— Nov., 1880.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		REMARKS.
	Groups	Spots	Groups	Spots	Groups	Spots	Groups	Spots	
2nd, 4 p. m.							3	25†	
7th, 11 a. m.	0	0			0	0	1	3	Faculae.
8th, 8 a. m.	0	0	0	0	0	0	1	3	Faculae.
2 p. m.	0	0	0	0	0	0	1	3	Faculae.
9th, 8 a. m.	1	5	1	3	0	0	1	5	Faculae. Spots small.
11th, 11 a. m.	0	0	0	0	0	0	0	0	Faculae.
12th, 7 a. m.	1	3	0	0	0	0	1	3	Faculae.
16th, 8 a. m.	0	12	0	0	0	0	1	15	Faculae.
16th, 8 a. m.	1	2	0	0	0	0	2	17	Faculae.
19th, 8 a. m.	3	18	0	0	0	0	5	35	Faculae.
20th, 4 p. m.	0	0	1	7	0	0	4	28	
21st, 2 p. m.	0	0	0	8	0	0	4	20	Many of the spots small.
22nd, 9 a. m.	0	0	0	8	0	0	4	12	
23rd, 9 a. m.	1	6	1	6	1	6	4	12	Faculae.
27th, 2 p. m.	2	16	3	6	2	16	3	22	
3 p. m.	0	0	0	0	0	0	3	25	
30th, 9 a. m.	0	0	0	0	0	0	2	20†	Faculae.

†Approximated.

Mr. William Dawson, at Spiceland, Ind., reports: 1st, 3 groups, 21 spots, air very poor; 2nd, 4 groups, 35 spots, air good; 7th, no spots seen, air very poor; 8th, 1 group, 25 spots, air pretty good, faculae at east and west; 9th, 3 groups, 6 spots, all small, air very poor; 12th, 1 group, 3 spots, air rather poor; 14th, 1 group, 15 spots, 6 minutes from east edge; 18th, 3 groups, 20 spots, 4 large spots in a row west of centre, air very bad; 19th, 3 groups, 29 spots; 20th, 2 groups, 26 spots, air very poor; 22nd, 3 groups, 12 spots, 2 groups very near west edge, 2 spots south of centre; 23rd, 3 groups, 7 spots, new group of 5 spots at east edge; 27th, 5 groups, 53 spots, 2 large spots very near together, 10 minutes from east edge, they were about 20,000 miles across and easily seen without telescope, air pretty good; 29th, 3 groups, 28 spots, 2 groups with large spots a little north of centre.

Mr. David Trowbridge, at Waterburgh, N. Y., reports: 2nd, 2 groups in south hemisphere, 3 spots; 9th, 10th, 11th, no spots; 16th, group in north hemisphere, half-way advanced across disk, one large spot; 17th, 3 groups, 1 in the north and 2 in the south hemisphere, 5 spots; 19th, 3 groups, same as 17th, 6 spots; 22nd, 2 groups very near west limb of sun; 23rd, the two groups have disappeared by solar rotation, no others visible; 25th, one group of 3 large spots in NE. quadrant; 26th, group of yesterday, 5 spots and a group $\frac{1}{4}$ of diameter from sun's west limb; 27th, large group, 5 spots and a faint group farther south and near the equator, faint group of yesterday disappeared; 29th, one large group, observations partly obscured by clouds; 30th, same group as yesterday, 1 large and 1 small spot. Observations on the 1st, 3rd to 7th, 12th to 15th, 18th, 20th, 21st, 24th and 28th, interrupted by clouds.

PUBLISHED BY ORDER OF THE SECRETARY OF WAR.



Chief Signal Officer.

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